

1 WHAT IS CLAIMED IS:

2 1. A vehicle surroundings monitoring apparatus,  
3 comprising:

4 frontal information detecting means for detecting at  
5 least solid object information and traveling road information  
6 in front of an own vehicle;

7 preceding vehicle trace calculating means for  
8 calculating a trace of a preceding vehicle from past data of said  
9 preceding vehicle;

10 first own traveling path calculating means for  
11 calculating a first traveling path of said own vehicle based on  
12 said traveling road information;

13 second own traveling path calculating means for  
14 calculating a second traveling path of said own vehicle based  
15 on said trace of said preceding vehicle; and

16 final own traveling path calculating means for  
17 calculating a final traveling path of said own vehicle based on  
18 said first traveling path and said second traveling path;

19

20 2. A vehicle surroundings monitoring apparatus,  
21 comprising:

22 frontal information detecting means for detecting at  
23 least solid object information and traveling road information  
24 in front of an own vehicle;

25 first own traveling path calculating means for

1 calculating a first traveling path of said own vehicle based on  
2 said traveling road information;  
3           third own traveling path calculating means for  
4 calculating a third traveling path of an own vehicle based on  
5 traveling conditions of said own vehicle; and  
6           final own traveling path calculating means for  
7 calculating a final traveling path of said own vehicle based on  
8 said first traveling path and said third traveling path;  
9  
10 3.       A vehicle surroundings monitoring apparatus,  
11 comprising:  
12           frontal information detecting means for detecting at  
13 least solid object information and traveling road information  
14 in front of an own vehicle;  
15           preceding vehicle trace calculating means for  
16 calculating a trace of a preceding vehicle from past data of said  
17 preceding vehicle;  
18           first own traveling path calculating means for  
19 calculating a first traveling path of said own vehicle based on  
20 said traveling road information;  
21           second own traveling path calculating means for  
22 calculating a second traveling path of said own vehicle based  
23 on said trace of said preceding vehicle;  
24           third own traveling path calculating means for  
25 calculating a third traveling path of said own vehicle based on

1 traveling conditions of said own vehicle; and

2 final own traveling path calculating means for  
3 calculating a final traveling path of said own vehicle based on  
4 said first traveling path, said second traveling path and said  
5 third traveling path.

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7 4. A vehicle surroundings monitoring apparatus,  
8 comprising:

9 frontal information detecting means for detecting at  
10 least solid object information and traveling road information  
11 in front of an own vehicle;

12 preceding vehicle trace calculating means for  
13 calculating a trace of a preceding vehicle from past data of said  
14 preceding vehicle;

15 first own traveling path calculating means for  
16 calculating a first traveling path of said own vehicle based on  
17 said traveling road information;

18 second own traveling path calculating means for  
19 calculating a second traveling path of said own vehicle based  
20 on said trace of said preceding vehicle;

21 third own traveling path calculating means for  
22 calculating a third traveling path of said own vehicle based on  
23 traveling conditions of said own vehicle;

24 fourth own traveling path calculating means for  
25 calculating a fourth traveling path of said own vehicle based

1 on said first own traveling path and said third own traveling  
2 path; and

3 final own traveling path calculating means for  
4 calculating a final traveling path of said own vehicle based on  
5 said fourth traveling path and said second traveling path when  
6 a preestablished condition is satisfied.

7

8 5. The vehicle surroundings monitoring apparatus  
9 according to claim 4, wherein said preestablished condition is  
10 that the preceding vehicle exists and there is no possibility  
11 of evacuation of said preceding vehicle and said own vehicle does  
12 not make a turn.

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14 6. The vehicle surroundings monitoring apparatus  
15 according to claim 2, wherein said traveling conditions include  
16 at least a yaw rate of said own vehicle.

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18 7. The vehicle surroundings monitoring apparatus  
19 according to claim 3, wherein said traveling conditions include  
20 at least a yaw rate of said own vehicle.

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22 8. The vehicle surroundings monitoring apparatus  
23 according to claim 4, wherein said traveling conditions include  
24 at least a yaw rate of said own vehicle.

25

1 9. The vehicle surroundings monitoring apparatus  
2 according to claim 1, wherein said final own traveling path is  
3 calculated from a previous own traveling path and a present own  
4 traveling path.

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6 10 The vehicle surroundings monitoring apparatus  
7 according to claim 2, wherein said final own traveling path is  
8 calculated from a previous own traveling path and a present own  
9 traveling path.

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11 11 The vehicle surroundings monitoring apparatus  
12 according to claim 3, wherein said final own traveling path is  
13 calculated from a previous own traveling path and a present own  
14 traveling path.

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16 12 The vehicle surroundings monitoring apparatus  
17 according to claim 4, wherein said final own traveling path is  
18 calculated from a previous own traveling path and a present own  
19 traveling path.

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21 13. The vehicle surroundings monitoring apparatus  
22 according to claim 1, wherein said final own traveling path is  
23 calculated based on respectively weighted own traveling paths.

24

25 14. The vehicle surroundings monitoring apparatus

1 according to claim 2, wherein said final own traveling path is  
2 calculated based on respectively weighted own traveling paths.

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4 15. The vehicle surroundings monitoring apparatus  
5 according to claim 3, wherein said final own traveling path is  
6 calculated based on respectively weighted own traveling paths.

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8 16. The vehicle surroundings monitoring apparatus  
9 according to claim 4, wherein said final own traveling path is  
10 calculated based on respectively weighted own traveling paths.

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12 17. The vehicle surroundings monitoring apparatus  
13 according to claim 1, wherein when other own traveling paths are  
14 calculated using said second own traveling path, said second own  
15 traveling path is effectively used only in the vicinity of said  
16 preceding vehicle.

17

18 18. A traveling control system for controlling a traveling  
19 of an own vehicle at least based on said final own traveling path  
20 calculated by said vehicle surroundings monitoring apparatus  
21 described in claims 1.

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23 19. A traveling control system for controlling a traveling  
24 of an own vehicle at least based on said final own traveling path  
25 calculated by said vehicle surroundings monitoring apparatus

1 described in claims 2.

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3 20. A traveling control system for controlling a traveling  
4 of an own vehicle at least based on said final own traveling path  
5 calculated by said vehicle surroundings monitoring apparatus  
6 described in claims 3.

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8 21. A traveling control system for controlling a traveling  
9 of an own vehicle at least based on said final own traveling path  
10 calculated by said vehicle surroundings monitoring apparatus  
11 described in claims 4.

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